

MAY 16 2006

FAX TRANSMISSION**DATE:** May 16, 2006**PTO IDENTIFIER:** Application Number 10/540618-Conf. #9016
Patent Number**Inventor:** Graham REED et al.**MESSAGE TO:** US Patent and Trademark Office**FAX NUMBER:** (571) 273-8300**FROM:** LAHIVE & COCKFIELD, LLP
Anthony A. Laurentano**PHONE:** (617) 227-7400**Attorney Dkt. #:** FHW-142US**PAGES (Including Cover Sheet):** 15**CONTENTS:**
Request for Corrected Filing Receipt (1 page)
Copy of Filing Receipt with Correction Noted (3 pages)
Courtesy Copy of Preliminary Amendment (6 pages)
Courtesy Copy of Application Data Sheet (3 pages)
Certificate of Transmission (1 page)

If your receipt of this transmission is in error, please notify this firm immediately by collect call to sender at (617) 227-7400 and send the original transmission to us by return mail at the address below.

This transmission is intended for the sole use of the individual and entity to whom it is addressed, and may contain information that is privileged, confidential and exempt from disclosure under applicable law. You are hereby notified that any dissemination, distribution or duplication of this transmission by someone other than the intended addressee or its designated agent is strictly prohibited.

LAHIVE & COCKFIELD, LLP
28 State Street, Boston, Massachusetts 02109
Telephone: (617) 227-7400 Facsimile: (617) 742-4214

MAY 16 2006

Docket No.: FHW-142US
(PATENT)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted by facsimile to the Patent and Trademark Office, facsimile no. (571) 273-8300 at Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: May 16, 2006

Signature:

(Anthony A. Laurentano)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Graham Reed *et al.*

Application No.: 10/540618

Confirmation No.: 9016

Filed: June 23, 2005

Art Unit: 2874

For: OPTICAL COUPLER

Examiner: Not Yet Assigned

REQUEST FOR CORRECTED FILING RECEIPT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant hereby requests that a corrected Filing Receipt be issued in the above-identified patent application. The official Filing Receipt received by Applicant, a copy of which is attached hereto, has an error in the title. The title of the application was previously amended from

DUAL GRATING ASSISTED OPTICAL COUPLER to **OPTICAL COUPLER** *as amended*

A copy of the Official Filing Receipt is enclosed. The correction to the title is noted on the second page. Courtesy copies of both the First Preliminary Amendment and Application Data Sheet are also submitted in support of correction.

Applicant additionally requests that all pertinent U.S. Patent and Trademark Office records relating to the subject application be changed to reflect this correction.

Dated: May 16, 2006

Respectfully submitted,

By

Anthony A. Laurentano

Registration No.: 38,220

LAHIVE & COCKFIELD, LLP

28 State Street

Boston, Massachusetts 02109

(617) 227-7400

(617) 742-4214 (Fax)

Attorney/Agent For Applicant



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/540,618	06/23/2005	2874	500	FHW-142US	7	22	1

CONFIRMATION NO. 9016

FILING RECEIPT

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
OC000000016003823

959
LAHIVE & COCKFIELD
28 STATE STREET
BOSTON, MA 02109

Date Mailed: 02/24/2006

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Graham Reed, Surrey, UNITED KINGDOM;
Goran Masanovic, Surrey, UNITED KINGDOM;
Vittorio Passaro, Surrey, UNITED KINGDOM;

Assignment For Published Patent Application

THE UNIVERSITY OF SURREY, Guildford, UNITED KINGDOM

Power of Attorney: The patent practitioners associated with Customer Number 959.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/GB03/05634 12/23/2003

Foreign Applications

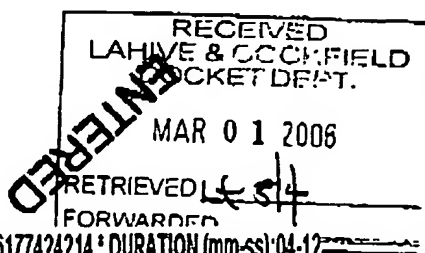
UNITED KINGDOM 0229732.3 12/23/2002

Projected Publication Date: To Be Determined - pending completion of Security Review

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **



Title

~~Dual grating assisted optical coupler~~

Optical Coupler

Preliminary Class

385

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process simplifies the filing of patent applications on the same invention in member countries, but does not result in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof

unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations, especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

MAY 16 2006

Docket No.: FHW-142US
(PATENT)

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 488 142 621 US, in an envelope addressed to: MS PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: 23 June 2005

Signature: 
(Anthony A. LaPorte)**IN THE UNITED STATES PATENT OFFICE AS DESIGNATED OFFICE (DO/US)****In re Patent Application of:****Graham Reed *et al.*****International Application No.: PCT/GB2003/005634****International Filing Date: December 23, 2003****Application No.: NEW APPLICATION**

Art Unit: N/A

Filed: CONCURRENTLY HEREWITH

Examiner: Not Yet Assigned

For: OPTICAL COUPLER (AS AMENDED)**FIRST PRELIMINARY AMENDMENT**

MS PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

Prior to examination on the merits, please amend the above-identified U.S. patent application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Application No.: NEW APPLICATION

Docket No.: FHW-142US

AMENDMENTS TO THE SPECIFICATION

In the Specification:

Please amend the title as follows:

~~DUAL GRATING ASSISTED OPTICAL COUPLER~~

Page 1, line 2, after the title, please insert the following new paragraph:

Related Applications

This application is a 35 U.S.C. 371 national stage filing of International Application No. PCT/GB2003/005634, filed 23 December 2003, which claims priority to Great Britain Patent Application No. 0229732.3 filed on 23 December 2002 in Great Britain. The contents of the aforementioned applications are hereby incorporated by reference.

Application No.: NEW APPLICATION

Docket No.: FHW-142US

AMENDMENTS TO THE CLAIMS

Please amend claims 1-21 and add new claim 22 as follows:

1. (currently amended) An optical coupler comprising an input waveguide, an intermediate waveguide, an output waveguide, a first grating situated between the input and intermediate waveguides, and a second grating situated between the intermediate and output waveguides such that, in use, light propagating in the input waveguide is coupled into the intermediate waveguide with the assistance of the first grating, and ~~thereafter~~ then is coupled into the output waveguide with the assistance of the second grating.
2. (currently amended) A coupler according to claim 1, further comprising only two said gratings.
3. (currently amended) A coupler according to claim 1 ~~or claim 2~~, which is a directional coupler.
4. (currently amended) A coupler according to ~~any preceding claim 1, in which wherein~~ the input and output waveguides have differing refractive indices.
5. (currently amended) A coupler according to ~~any preceding claim 1, in which wherein~~ the input and output waveguides have at least one differing transverse dimension.
6. (currently amended) A coupler according to ~~any preceding claim 1, in which wherein~~ the intermediate waveguide has a different refractive index to that of the input waveguide, ~~and/or or~~ the output waveguide, or both.
7. (currently amended) A coupler according to claim 6, ~~in which wherein~~ the intermediate waveguide has a higher refractive index than ~~that of the~~ input waveguide and a lower refractive index than ~~that of the~~ output waveguide.

Application No.: NEW APPLICATION

Docket No.: FHW-142US

8. (currently amended) A coupler according to ~~any preceding claim 1, in which wherein~~ the intermediate waveguide has at least one different transverse dimension to that of the input waveguide, ~~and/or or~~ the output waveguide, or both.
9. (currently amended) A coupler according to ~~any preceding claim 1~~, further comprising a first transitional layer situated between the input waveguide and the intermediate waveguide.
10. (currently amended) A coupler according to ~~any preceding claim 1~~, further comprising a ~~second~~ transitional layer situated between the output waveguide and the intermediate waveguide.
11. (currently amended) A coupler according to ~~any preceding claim 1, in which wherein~~ the first and second gratings have differing periods, ~~and/or or~~ lengths, ~~and/or or~~ depths, ~~and/or or~~ profiles, ~~and/or or~~ duty cycles, or any combination thereof.
12. (currently amended) A coupler according to ~~any preceding claim 1~~, comprising a layered structure, in which each waveguide, grating or transitional layer comprises a respective layer or part thereof, of the structure.
13. (currently amended) A coupler according to claim 12, ~~in which the~~ layered structure comprises one or more layers of semiconductor, ~~and/or or~~ dielectric material, or both.
14. (currently amended) A coupler according to claim 13, ~~in which wherein~~ the semiconductor material comprises one or more of: silicon or related compounds; gallium arsenide or related compounds; indium phosphide or related compounds; or lithium niobate or related compounds.

Application No.: NEW APPLICATION

Docket No.: FHW-142US

15. (currently amended) A coupler according to ~~any one of claims 12 to 14, in which claim 13, wherein~~ the dielectric material comprises a glass, preferably a phosphosilicate glass.
16. (currently amended) A coupler according to ~~any preceding claim 1, in which wherein~~ the waveguides comprise rib waveguides, ~~and/or or~~ planar waveguides, ~~and/or or~~ strip waveguides, ~~and/or or~~ embedded waveguides, or any combination thereof.
17. (currently amended) An integrated optical device comprising an optical coupler according to ~~any preceding claim 1, in which wherein~~ the input waveguide ~~and/or or~~ the output waveguide of the coupler comprises a semiconductor waveguide of the device.
18. (currently amended) A device according to claim 17, ~~in which wherein~~ the semiconductor waveguide of the device comprises a semiconductor laser of the device.
19. (currently amended) A device according to claim 17, ~~in which wherein~~ the semiconductor waveguide of the device comprises a photodiode of the device.
20. (currently amended) The use of an optical coupler or device according to ~~any preceding claim 1,~~ to couple light between an external first waveguide and the output waveguide of the coupler, via the input waveguide of the coupler.
21. (currently amended) The use according to claim 20, ~~in which wherein~~ the external first waveguide comprises an optical fibre.
22. (new) A coupler according to claim 10, further comprising a second transitional layer disposed between the output waveguide and the intermediate waveguide.

Application No.: NEW APPLICATION

Docket No.: FHW-142US

REMARKS

Preliminary to examination of this application, please amend claims 1-21 and add new claim 22 as set forth above. Applicants amend the claims to remove multiple dependencies, provide proper antecedent basis, and to address other matters of form. The foregoing amendments are not related to issues of patentability. Support for the amendments to the claims can be found throughout the specification, Figures and claims as originally filed.

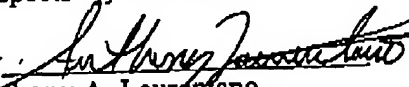
Applicants respectfully submit that the foregoing amendments introduce no new matter. Entry of the foregoing Preliminary Amendment is in order and requested.

If there are any questions regarding the proposed amendments to the application, we invite the Examiner to call Applicant's representative at the telephone number below.

Applicant believes no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. FHW-142US from which the undersigned is authorized to draw.

Dated: 23 June 2005

Respectfully submitted,

By: 
Anthony A. Lauretano
Registration No.: 38,220
LAHIVE & COCKFIELD, LLP
28 State Street
Boston, Massachusetts 02109
(617) 227-7400
(617) 742-4214 (Fax)
Attorney/Agent For Applicant

Applicant Authority Type:: Inventor
Primary Citizenship Country:: Serbia and Montenegro
Status:: Full Capacity
Given Name:: Goran
Family Name:: MASANOVIC
City of Residence:: Guildford
Country of Residence:: United Kingdom
Street of mailing address:: The University of Surrey
City of mailing address:: Guildford
Country of mailing address:: United Kingdom
Postal or Zip Code of mailing address:: GU2 7XH

Applicant Authority Type:: Inventor
Primary Citizenship Country:: Italy
Status:: Full Capacity
Given Name:: Vittorio
Family Name:: PASSARO
City of Residence:: Guildford
Country of Residence:: United Kingdom
Street of mailing address:: The University of Surrey
City of mailing address:: Guildford
Country of mailing address:: United Kingdom
Postal or Zip Code of mailing address:: GU2 7XH

Correspondence Information

Correspondence Customer Number:: 00959

Representative Information

Representative Customer Number:: 00959

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	National Stage of	PCT/GB2003/0056 34	12/23/03

Foreign Priority Information

Country::	Application number::	Filing Date::	Priority Claimed::
United Kingdom	0229732.3	12/23/02	Yes

Assignee Information

Assignee name::

THE UNIVERSITY OF SURREY

Street of mailing address::

City of mailing address::

Gulldford

Country of mailing address::

United Kingdom

Postal or Zip Code of mailing address::

GU2 7XH

Application Data Sheet**Application Information**

Application Type::	Regular
Subject Matter::	Utility
Suggested Group Art Unit::	N/A
CD-ROM or CD-R?::	None
Sequence submission?::	None
Computer Readable Form (CRF)?::	No
Title::	OPTICAL COUPLER
Attorney Docket Number::	FHW-142US
Request for Early Publication?::	No
Request for Non-Publication?::	No
Small Entity?::	Yes
Petition Included?::	No
Secrecy Order in Parent Appl.?::	No

Applicant Information

Applicant Authority Type::	Inventor
Primary Citizenship Country::	United Kingdom
Status::	Full Capacity
Given Name::	Graham
Family Name::	REED
City of Residence::	Guildford
Country of Residence::	United Kingdom
Street of mailing address::	The University of Surrey
City of mailing address::	Gulldford
Country of mailing address::	United Kingdom
Postal or Zip Code of mailing address::	GU2 7XH

PTO/SB/07 (08-04)

Approved for use through 07/31/2006. OMB 0851-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Application No. (If known): 10/540618

Attorney Docket No.: FHW-142US

Certificate of Transmission under 37 CFR 1.8

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office.

on May 16, 2006
Date



Signature

Anthony A. Laurentano

Typed or printed name of person signing Certificate

38,220
Registration Number, if applicable

(617) 227-7400
Telephone Number

Note: Each paper must have its own certificate of transmission, or this certificate must identify each submitted paper.

Request for Corrected Filing Receipt (1 page)
Copy of Filing Receipt with Correction Noted (3 pages)
Courtesy Copy of Preliminary Amendment (6 pages)
Courtesy Copy of Application Data Sheet (3 pages)
Certificate of Transmission (1 page)

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.